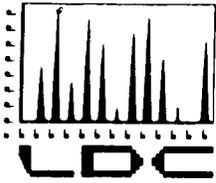


**APPENDIX C**

**Data Validation**



**LABORATORY DATA CONSULTANTS, INC.**

7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Haley & Aldrich, Inc.  
9040 Friars Road, Suite 202  
San Diego, CA 92108  
ATTN: Ms. Beth Breitenbach

June 7, 2002

SUBJECT: BRC Former C-6 Torrance Harbor Gateway, Data Validation

Dear Ms. Breitenbach,

Enclosed is the final validation report for the fraction listed below. This SDG was received on May 22, 2002. Attachment 1 is a summary of the samples that were reviewed for each analysis.

**LDC Project # 8487:**

<u>SDG #</u>	<u>Fraction</u>
E2C270261	Volatiles

The data validation was performed under Tier 2 and Tier 3 guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996

Please feel free to contact us if you have any questions.

Sincerely,

Richard M. Amano  
President/Principal Chemist



**BRC Former C-6 Torrance Gateway  
Data Validation Reports  
LDC# 8487**

Volatiles

*LDC*

**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** BRC Former C-6 Torrance Harbor Gateway  
**Collection Date:** March 26, 2002  
**LDC Report Date:** May 30, 2002  
**Matrix:** Water  
**Parameters:** Volatiles  
**Validation Level:** Tier 2 & Tier 3  
**Laboratory:** Severn Trent Laboratories  
**Sample Delivery Group (SDG):** E2C270261

**Sample Identification**

EB\_TAIT032602\_0001  
TMW\_6\_032602\_1105  
BL\_3\_032602\_1145  
TMW\_9\_032602\_1220  
WCC\_4S\_032602\_1315\*\*  
TMW4\_TAIT032602\_0001  
TMW4\_TAIT032602\_0002  
TMW\_7\_032602\_1441\*\*  
WCC\_6S\_032602\_1550  
TMW\_8\_032602\_1630  
TMW\_5\_032602\_1712  
TMW\_3\_032602\_1745  
TMW\_2\_032602\_1835  
TB\_TAIT032602\_0001

\*\*Indicates sample underwent Tier 3 review

## Introduction

This data review covers 14 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Samples indicated by a double asterisk on the front cover underwent a Tier 3 review. A Tier 2 review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Tier 2 criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

## I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

## II. GC/MS Instrument Performance Check

Instrument performance check data were reviewed for Tier 2/Tier 3 .

## III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs) .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

Date	Compound	%RSD	Associated Samples	Flag	A or P
12/12/01	Acetone 2-Butanone	40.946 30.075	All samples in SDG E2C270261	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria with the following exceptions:

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
12/12/01	Acetone Acrolein Acrylonitrile 2-Butanone Tetrahydrofuran 2-Chloroethylvinyl ether	0.02200 (≥0.05) 0.00188 (≥0.05) 0.01266 (≥0.05) 0.02964 (≥0.05) 0.02032 (≥0.05) 0.01518 (≥0.05)	All samples in SDG E2C270261	J (all detects) UJ (all non-detects)	A

## IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs) .

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
3/27/02	Chloromethane Bromomethane Acrolein Acrylonitrile 2-Butanone Tetrahydrofuran 2-Hexanone	44.2 48.6 51.9 27.0 28.8 25.8 30.7	EB_TAIT032602_0001 TMW_6_032602_1105 BL_3_032602_1145 TMW_9_032602_1220 WCC_4S_032602_1315** TMW4_TAIT032602_0001 TMW4_TAIT032602_0002 TMW_7_032602_1441** WCC_6S_032602_1550 TMW_8_032602_1630 TMW_5_032602_1712 EW39X1AA	J (all detects) UJ (all non-detects)	A
3/28/02	Chloromethane Acrolein Iodomethane Acrylonitrile 2-Hexanone	31.7 56.5 45.9 31.9 26.4	TMW_3_032602_1745 TMW_2_032602_1835 TB_TAIT032602_0001 EW5K41AA	J (all detects) UJ (all non-detects)	A

All of the continuing calibration RRF values were within method and validation criteria with the following exceptions:

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
3/27/02	Acrolein	0.00090 (≥0.05)	EB_TAIT032602_0001 TMW_6_032602_1105 BL_3_032602_1145 TMW_9_032602_1220 WCC_4S_032602_1315** TMW4_TAIT032602_0001 TMW4_TAIT032602_0002 TMW_7_032602_1441** WCC_6S_032602_1550 TMW_8_032602_1630 TMW_5_032602_1712 EW39X1AA	J (all detects) R (all non-detects)	A

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
3/27/02	Acetone Acrylonitrile 2-Butanone Tetrahydrofuran 2-Chloroethylvinyl ether	0.01742 (≥0.05) 0.00924 (≥0.05) 0.02111 (≥0.05) 0.01507 (≥0.05) 0.01533 (≥0.05)	EB_TAIT032602_0001 TMW_6_032602_1105 BL_3_032602_1145 TMW_9_032602_1220 WCC_4S_032602_1315** TMW4_TAIT032602_0001 TMW4_TAIT032602_0002 TMW_7_032602_1441** WCC_6S_032602_1550 TMW_8_032602_1630 TMW_5_032602_1712 EW39X1AA	J (all detects) UJ (all non-detects)	A
3/28/02	Acetone Acrolein Acrylonitrile 2-Butanone Tetrahydrofuran 2-Chloroethylvinyl ether	0.01781 (≥0.05) 0.00082 (≥0.05) 0.00861 (≥0.05) 0.02271 (≥0.05) 0.01657 (≥0.05) 0.01688 (≥0.05)	TMW_3_032602_1745 TMW_2_032602_1835 TB_TAIT032602_0001 EW5K41AA	J (all detects) R (all non-detects)	A

## V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

## VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
All samples in SDG E2C270261	All TCL compounds	No MS/MSD associated with these samples.	MS/MSD required.	None	P

## VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

## IX. Regional Quality Assurance and Quality Control

Not applicable.

## X. Internal Standards

All internal standard areas and retention times were within QC limits.

## XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a Tier 3 review was performed. Raw data were not evaluated for the samples reviewed by Tier 2 criteria.

## XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a Tier 3 review was performed. Raw data were not evaluated for the samples reviewed by Tier 2 criteria.

## XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

## XIV. System Performance

The system performance was within validation criteria for samples on which a Tier 3 review was performed. Raw data were not evaluated for the samples reviewed by Tier 2 criteria.

## XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

## XVI. Field Duplicates

Samples TMW4\_TAIT032602\_0001 and TMW4\_TAIT032602\_0002 were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	TMW4_TAIT032602_0001	TMW4_TAIT032602_0002	
1,2-Dichloroethane	10	12U	200
1,1-Dichloroethene	720	760	5
Chloroform	11	11	0
1,1-Dichloroethane	18	16	12

Compound	Concentration (ug/L)		RPD
	TMW4_TAIT032602_0001	TMW4_TAIT032602_0002	
cis-1,2-Dichloroethene	36	32	12
trans-1,2-Dichloroethene	21	21	0
Trichloroethene	1900	1900	0

### XVII. Field Blanks

Sample EB\_TAIT032602\_0001 was identified as an equipment blank. No volatile contaminants were found in this blank.

Sample TB\_TAIT032602\_0001 was identified as a trip blank. No volatile contaminants were found in this blank.

**BRC Former C-6 Torrance Harbor Gateway  
Volatiles - Data Qualification Summary - SDG E2C270261**

SDG	Sample	Compound	Flag	A or P	Reason
E2C270261	EB_TAIT032602_0001 TMW_6_032602_1105 BL_3_032602_1145 TMW_9_032602_1220 WCC_4S_032602_1315** TMW4_TAIT032602_0001 TMW4_TAIT032602_0002 TMW_7_032602_1441** WCC_6S_032602_1550 TMW_8_032602_1630 TMW_5_032602_1712 TMW_3_032602_1745 TMW_2_032602_1835 TB_TAIT032602_0001	Acetone  2-Butanone	J (all detects) UJ (all non-detects)  J (all detects) UJ (all non-detects)	A	Initial calibration (%RSD)
E2C270261	EB_TAIT032602_0001 TMW_6_032602_1105 BL_3_032602_1145 TMW_9_032602_1220 WCC_4S_032602_1315** TMW4_TAIT032602_0001 TMW4_TAIT032602_0002 TMW_7_032602_1441** WCC_6S_032602_1550 TMW_8_032602_1630 TMW_5_032602_1712 TMW_3_032602_1745 TMW_2_032602_1835 TB_TAIT032602_0001	Acetone Acrolein Acrylonitrile 2-Butanone Tetrahydrofuran 2-Chloroethylvinyl ether	J (all detects) UJ (all non-detects)	A	Initial calibration (RRF)
E2C270261	EB_TAIT032602_0001 TMW_6_032602_1105 BL_3_032602_1145 TMW_9_032602_1220 WCC_4S_032602_1315** TMW4_TAIT032602_0001 TMW4_TAIT032602_0002 TMW_7_032602_1441** WCC_6S_032602_1550 TMW_8_032602_1630 TMW_5_032602_1712	Chloromethane Bromomethane Acrolein Acrylonitrile 2-Butanone Tetrahydrofuran 2-Hexanone	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
E2C270261	TMW_3_032602_1745 TMW_2_032602_1835 TB_TAIT032602_0001	Chloromethane Acrolein Iodomethane Acrylonitrile 2-Hexanone	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)

SDG	Sample	Compound	Flag	A or P	Reason
E2C270261	EB_TAIT032602_0001 TMW_6_032602_1105 BL_3_032602_1145 TMW_9_032602_1220 WCC_4S_032602_1315** TMW4_TAIT032602_0001 TMW4_TAIT032602_0002 TMW_7_032602_1441** WCC_6S_032602_1550 TMW_8_032602_1630 TMW_5_032602_1712	Acrolein	J (all detects) R (all non-detects)	A	Continuing calibration (RRF)
E2C270261	EB_TAIT032602_0001 TMW_6_032602_1105 BL_3_032602_1145 TMW_9_032602_1220 WCC_4S_032602_1315** TMW4_TAIT032602_0001 TMW4_TAIT032602_0002 TMW_7_032602_1441** WCC_6S_032602_1550 TMW_8_032602_1630 TMW_5_032602_1712	Acetone Acrylonitrile 2-Butanone Tetrahydrofuran 2-Chloroethylvinyl ether	J (all detects) UJ (all non-detects)	A	Continuing calibration (RRF)
E2C270261	TMW_3_032602_1745 TMW_2_032602_1835 TB_TAIT032602_0001	Acetone Acrolein Acrylonitrile 2-Butanone Tetrahydrofuran 2-Chloroethylvinyl ether	J (all detects) R (all non-detects)	A	Continuing calibration (RRF)
E2C270261	EB_TAIT032602_0001 TMW_6_032602_1105 BL_3_032602_1145 TMW_9_032602_1220 WCC_4S_032602_1315** TMW4_TAIT032602_0001 TMW4_TAIT032602_0002 TMW_7_032602_1441** WCC_6S_032602_1550 TMW_8_032602_1630 TMW_5_032602_1712 TMW_3_032602_1745 TMW_2_032602_1835 TB_TAIT032602_0001	All TCL compounds	None	P	Matrix spike/Matrix spike duplicates

**BRC Former C-6 Torrance Harbor Gateway  
Volatiles - Laboratory Blank Data Qualification Summary - SDG E2C270261**

No Sample Data Qualified in this SDG

LDC #: 8487A1

**VALIDATION COMPLETENESS WORKSHEET**

Date: 5-29-02

SDG #: E2C270261

X EPA Level Region 1 - Tier 2/3

Page: 1 of 1

Laboratory: Severn Trent Laboratories, Inc.

Reviewer: MG

2nd Reviewer: [Signature]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: <u>3-26-02</u>
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	<u>None / P (non-client sample spiked)</u>
VIII.	Laboratory control samples	A	<u>LCS</u>
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Tier II validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Tier II validation.
XIII.	Tentatively identified compounds (TICs)	N	Not reviewed for Tier II validation. <u>Not reported</u>
XIV.	System performance	A	Not reviewed for Tier II validation.
XV.	Overall assessment of data	A	
XVI.	Field duplicates	SW	<u>D = 6 + 7</u>
XVII.	Field blanks	ND	<u>EB = 1      TB = 14</u>

Note: A = Acceptable      ND = No compounds detected      D = Duplicate  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

Validated Samples: \*\* Indicates sample underwent Tier III validation

1	EB_TAIT032602_0001	W	11	TMW_5_032602_1712	W	21		31
2	TMW_6_032602_1105		12	TMW_3_032602_1745		22	<u>AM. R.</u>	32
3	BL_3_032602_1145		13	TMW_2_032602_1835		23		33
4	TMW_9_032602_1220		14	TB_TAIT032602_0001		24		34
5	WCC_4S_032602_1315**		15	<u>EW39X1AA</u>		25		35
6	TMW4_TAIT032602_0001		16	<u>EW5K41AA</u>		26		36
7	TMW4_TAIT032602_0002		17			27		37
8	TMW_7_032602_1441**		18			28		38
9	WCC_6S_032602_1550		19			29		39
10	TMW_8_032602_1630		20			30		40

LDC #: 8487A1  
 SDG #: E2C270261

VALIDATION FINDINGS CHECKLIST

Page: 1 of 3  
 Reviewer: MG  
 2nd Reviewer: [Signature]

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
<b>II. GC/MS Instrument performance check</b>				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
<b>III. Initial calibration</b>				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?	✓			
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?		✓		
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) $\leq$ 25% and relative response factors (RRF) $\geq$ 0.05?		✓		
<b>V. Blanks</b>				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
<b>VI. Surrogate spikes</b>				
Were all surrogate %R within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
<b>VII. Matrix spike/Matrix spike duplicates</b>				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / <u>Water</u>		✓		None / P
Was a MS/MSD analyzed every 20 samples of each matrix?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	

LDC #: 8487A1  
 SDG #: E2C270261

VALIDATION FINDINGS CHECKLIST

Page: 2 of 3  
 Reviewer: MG  
 2nd Reviewer: [Signature]

Validation Area	Yes	No	NA	Findings/Comments
<b>VIII. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
<b>IX. Regional Quality Assurance and Quality Control</b>				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
<b>X. Internal standards</b>				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within $\pm 30$ seconds of the associated calibration standard?	✓			
<b>XI. Target compound identification</b>				
Were relative retention times (RRT's) within $\pm 0.06$ RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
<b>XII. Compound quantitation/CRQLs</b>				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
<b>XIII. Tentatively identified compounds (TICs)</b>				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within $\pm 20\%$ between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?			✓	
<b>XIV. System performance</b>				
System performance was found to be acceptable.	✓			
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	✓			
<b>XVI. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.	✓			

LDC #: 8487A1  
SDG #: E2C270261

VALIDATION FINDINGS CHECKLIST

Page: 3 of 3  
Reviewer: MG  
2nd Reviewer: [Signature]

Validation Area	Yes	No	NA	Findings/Comments
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	Q. 1,2-Dichloropropane**	GG. Xylenes, total	WW. Bromobenzene	MMM. Naphthalene
B. Bromomethane	R. cis-1,3-Dichloropropene	HH. Vinyl acetate	XX. 1,2,3-Trichloropropane	NNN. 1,2,3-Trichlorobenzene
C. Vinyl chloride**	S. Trichloroethene	II. 2-Chloroethylvinyl ether	YY. n-Propylbenzene	OOO. 1,3,5-Trichlorobenzene
D. Chloroethane	T. Dibromochloromethane	JJ. Dichlorodifluoromethane	ZZ. 2-Chlorotoluene	PPP. trans-1,2-Dichloroethene
E. Methylene chloride	U. 1,1,2-Trichloroethane	KK. Trichlorofluoromethane	AAA. 1,3,5-Trimethylbenzene	QQQ. cis-1,2-Dichloroethene
F. Acetone	V. Benzene	LL. Methyl-tert-butyl ether	BBB. 4-Chlorotoluene	RRR. m,p-Xylenes
G. Carbon disulfide	W. trans-1,3-Dichloropropene	MM. 1,2-Dibromo-3-chloropropane	CCC. tert-Butylbenzene	SSS. o-Xylene
H. 1,1-Dichloroethene**	X. Bromoform*	NN. Diethyl ether	DDD. 1,2,4-Trimethylbenzene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane
I. 1,1-Dichloroethane*	Y. 4-Methyl-2-pentanone	OO. 2,2-Dichloropropane	EEE. sec-Butylbenzene	UUU. Benzyl chloride
J. 1,2-Dichloroethene, total	Z. 2-Hexanone	PP. Bromochloromethane	FFF. 1,3-Dichlorobenzene	VVV. 4-Ethyltoluene
K. Chloroform**	AA. Tetrachloroethene	QQ. 1,1-Dichloropropene	GGG. p-Isopropyltoluene	WWW. Ethanol
L. 1,2-Dichloroethane	BB. 1,1,2,2-Tetrachloroethane*	RR. Dibromomethane	HHH. 1,4-Dichlorobenzene	XXX. Ethyl ether
M. 2-Butanone	CC. Toluene**	SS. 1,3-Dichloropropane	III. n-Butylbenzene	YYY. tert-Butanol
N. 1,1,1-Trichloroethane	DD. Chlorobenzene*	TT. 1,2-Dibromoethane	JJJ. 1,2-Dichlorobenzene	
O. Carbon tetrachloride	EE. Ethylbenzene**	UU. 1,1,1,2-Tetrachloroethane	KKK. 1,2,4-Trichlorobenzene	
P. Bromodichloromethane	FF. Styrene	VV. Isopropylbenzene	LLL. Hexachlorobutadiene	

\* = System performance check compounds (SPCC) for RRF ; \*\* = Calibration check compounds (CCC) for %RSD.

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



VALIDATION FINDING WORKSHEET  
Continuing Calibration

LDC #: 24 11  
SDG #: E2C070261

Pr: 1 of 1  
Reviewer: MG  
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)  
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".  
(Y) N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?  
(Y) N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?  
(Y) N N/A Were all %D and RRFs within the validation criteria of  $\leq 25\%$  D and  $\geq 0.05$  RRF?

#	Date	Standard ID	Compound	Finding %D (Limit: $\leq 25.0\%$ )	Finding RRF (Limit: $\geq 0.05$ )	Associated Samples	Qualifications
1	3-27-02	HS3149	A	44.2		1-11, EW39X1AA	J/UJ/A
			B	48.6			
			Acrolein	51.9			
			Acrylonitrile	27.0			
			M	28.8			
			Tetrahydrofuran	25.8			
			Z	30.7			
			F		0.01742		J/UJ/A*
			Acrolein		0.00090		J/R/A
			Acrylonitrile		0.00924		J/UJ/A*
			M		0.02111		
			Tetrahydrofuran		0.01507		
			II		0.01533		
2	3-28-02	HS3150	A	31.7		12-14, EW5K41AA	J/UJ/A
			Acrolein	56.5			
			Iodomethane	45.9			
			Acrylonitrile	31.9			
			Z	26.4			
			F		0.01781		J/R/A
			Acrolein		0.00082		
			Acrylonitrile		0.00861		
			M		0.02271		
			Tetrahydrofuran		0.01657		
			II		0.01688		

\*RRF finding estimated for good response

LDC #: 8487A1  
 SDG #: E2C270261

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**

Page: 1 of 1  
 Reviewer: MG  
 2nd reviewer: A

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

N N/A Were field duplicate pairs identified in this SDG?  
 N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration ( $\mu\text{g/L}$ )		RPD
	6	7	
L	10	12 U	200
H	720	760	5
K	11	11	0
I	18	16	12
QQQ	36	32	12

Compound	Concentration ( $\mu\text{g/L}$ )		RPD
	6	7	
PPP	21	21	0
S	1900	1900	0

Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

LDC #: 8487A1  
 SDG #: E2C270261

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_s)/(A_s)(C_x)$   
 average RRF = sum of the RRFs/number of standards  
 $\%RSD = 100 * (S/X)$   
 $A_x$  = Area of compound,  
 $C_x$  = Concentration of compound,  
 $S$  = Standard deviation of the RRFs  
 $X$  = Mean of the RRFs  
 $A_s$  = Area of associated internal standard  
 $C_s$  = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported		Recalculated		Reported		Recalculated	
				RRF (10 std)	RRF (10 std)	Average RRF (Initial)	Average RRF (Initial)	%RSD	%RSD		
1	HS3041	12-12-01	Methylene chloride (1st internal standard)	0.22195	0.222	0.22523	0.225	8.989	9.00		
	43		Trichlorethene (2nd internal standard) DD	0.99121	0.991	1.00166	1.002	7.883	7.88		
	44		Toluene (3rd internal standard) HHH	1.58690	1.587	1.58252	1.583	7.164	7.16		
	45										
	46										
2			Methylene chloride (1st internal standard)								
			Trichlorethene (2nd internal standard)								
			Toluene (3rd internal standard)								
3			Methylene chloride (1st internal standard)								
			Trichlorethene (2nd internal standard)								
			Toluene (3rd internal standard)								
4			Methylene chloride (1st internal standard)								
			Trichlorethene (2nd internal standard)								
			Toluene (3rd internal standard)								

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Continuing Calibration Results Verification**

LDC #: 8487A1  
 SDG #: E2C270261

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 $\% \text{ Difference} = 100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$   
 $\text{RRF} = (A_x)(C_w) / (A_w)(C_x)$   
 $A_w$  = Area of associated internal standard  
 $A_x$  = Area of compound,  
 $C_w$  = Concentration of internal standard  
 $C_x$  = Concentration of compound,

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported		Recalculated		
					RRF (CC)	%D	RRF (CC)	%D	
1	H53149	3-27-02	Methylene chloride (1st internal standard) E <del>Trichloroethene</del> Trichloroethene (2nd internal standard) DD Toluene (3rd internal standard) HHH	0.22523	0.22193	0.222	1.4	1.5	1.4
2			Methylene chloride (1st internal standard) Trichloroethene (2nd internal standard) Toluene (3rd internal standard)	1.00166	1.03302	1.033	3.1	1.5	3.1
3			Methylene chloride (1st internal standard) Trichloroethene (2nd internal standard) Toluene (3rd internal standard)	1.58252	1.60700	1.607	1.5		1.5
4			Methylene chloride (1st internal standard) Trichloroethene (2nd internal standard) Toluene (3rd internal standard)						

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 8487A1  
 SDG #: E2C270261

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1  
 Reviewer: MG  
 2nd reviewer: \_\_\_\_\_

**METHOD: GC/MS VOA (EPA SW 846 Method 8260B)**

Percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery:  $SF/SS * 100$

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: 5

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	10.0000	9.89559	99	99	0
Bromofluorobenzene	↓	9.85270	99	99	↓
1,2-Dichloroethane-d4	↓	10.1663	102	102	↓
Dibromofluoromethane					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					



